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Applicant: LEBERER, Ekkehard Confirmation No.: 8288  
Appl. No.: 09/758,036 Examiner: Not yet assigned  
Filing Date: January 11, 2001 Art Unit: 1645  
Title: Potassium Channel Mutants of the Yeast *Saccharomyces Cerevisiae* and  
their use for Screening Eukaryotic Potassium Channels



**INFORMATION DISCLOSURE STATEMENT  
UNDER 37 CFR §1.56 and 37 CFR §1.97**

Director of Patents  
Washington, D.C. 20231

Sir:

Submitted herewith on Form PTO/SB/08A is a listing of documents known to applicants in order to comply with applicants' duty of disclosure pursuant to 37 C.F.R. §1.56 and §1.97. A copy of each of the listed documents are being submitted to comply with the provisions of 37 C.F.R. §1.97-1.99. A complete copy of references A28 and A42 were unavailable at the time of filing this Information Disclosure Statement. The applicant will submit a copy of these references in due course.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or is considered to be material to patentability as defined in 37 C.F.R. §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* prior art reference against the claims of the present application.

**TIMING/FEE**

The instant Information Disclosure Statement is being filed in compliance with 37 CFR §1.97(b) prior to the mailing date of the first official action, therefore, no fee is required in connection with its filing.

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Attorney Docket No. 38005-0126

Applicants respectfully request that the listed documents be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08A be returned in accordance with M.P.E.P. §609.

Respectfully submitted,

Date: June 11, 2001

HELLER EHRMAN WHITE & MCAULIFFE  
1666 K Street, N.W., Suite 300  
Washington, DC 20006  
Telephone: (202) 912-2777  
Facsimile: (202) 912-2020

By Patricia D. Granados

Patricia D. Granados  
Attorney for Applicant  
Registration No. 33,683  
Customer No. 26633



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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

1 of 4

Complete if Known

Application Number	09/758,036
Filing Date	January 11, 2001
First Named Inventor	Ekkehard LEBERER
Group Art Unit	1604
Examiner Name	Unassigned Joike
Attorney Docket Number	38005-0126

### OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	A01 ✓	CURRAN, M.E., et al; "Molecular cloning, characterization, and genomic localization of a human potassium channel gene"; <i>Genomics</i> , 1992; pp. 729-737; Vol. 12; Academic Press, Inc.	
	A02 ✓	DASCAL, N. et al; "Atrial G protein-activated K <sup>+</sup> channel: Expression cloning and molecular properties"; <i>Proc. Natl. Acad. Sci. USA</i> ; November 1993; pp. 10235-10239; Vol. 90;	
	A03 ✓	FAIRMAN, C., et al; "Potassium uptake through the TOK1 K <sup>+</sup> channel in the budding yeast"; <i>J. Membr. Biol.</i> ; 1999; pp. 149-157; Vol. 168; Springer-Verlag New York Inc.; 1999	
	A04 ✓	FEDIDA, D. et al; "The 1997 Stevenson Award Lecture. Cardiac K <sup>+</sup> channel gating: cloned delayed rectifier mechanisms and drug modulation"; <i>Can. J. Physiol. Pharmacol.</i> ; 1998; pp 77-89; Vol. 76; NRC Canada; 1998	
	A05 ✓	GABER, R.F. et al; "TRK1 encodes a plasma membrane protein required for high-affinity potassium transport in <i>Saccharomyces cerevisiae</i> "; <i>Mol. Cell Biol.</i> ; 1988; pp 2848-2859; Vol. 8; American Society for Microbiology; 1988	
	A06 ✓	GOLDSTEIN, S.A. et al; "Three new dominant drug resistant cassettes for gene disruption in <i>Saccharomyces cerevisiae</i> "; <i>Yeast</i> ; 1999; pp 1541-1553; Vol. 15; John Wiley & Sons, Ltd.	
	A07 ✓	GOLDSTEIN, S.A. et al; "ORK1, a potassium-selective leak channel with two pore domains cloned from <i>Drosophila melanogaster</i> by expression in <i>Saccharomyces cerevisiae</i> "; <i>Proc. Natl. Acad. Sci. USA</i> ; November 1990; pp 13256-13261; Vol. 87	
	A08 ✓	GULDENER, U. et al; "A new efficient gene disruption cassette for repeated use in a budding yeast"; <i>Nucleic Acids. Res.</i> ; 1996; pp 2519-2524; Vol. 24; Oxford University Press	
	A09 ✓	IKEDA, K. et al; "Functional coupling of the neuropeptid/orphin/peptid receptor with the G-protein-activated K <sup>+</sup> (GIRK) channel"; <i>Brain Res. Mol. Brain Res.</i> ; 1997; pp 117-126; Vol. 45; Elsevier Science B.V.	
	A10 ✓	ITOH, T. et al; "Genomic organization and mutational analysis of HERG, a gene responsible for familial long QT syndrome"; <i>Hum. Genet.</i> ; 1998; pp 435-439; Vol. 102; Springer-Verlag 1998	
	A11 ✓	JAN, L.Y. et al; "Cloned potassium channels from eukaryotes and prokaryotes"; <i>Annu. Rev. Neurosci.</i> ; 1997; pp 91-123; Vol. 20; Annual Reviews Inc.	
	A12 ✓	JELACIC, T.M. et al; "Functional expression and characterization of G-protein-gated inwardly rectifying K <sup>+</sup> channels containing GIRK3"; <i>J. Membr. Biol.</i> 1999; pp 123-129; Vol. 169; Springer-Verlag New York Inc.; 1999	

Examiner Signature	Date Considered
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Substitute for form 1449A/PTO		<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>		Application Number	09/758,036
(use as many sheets as necessary)		Filing Date	January 11, 2001
Sheet	2	First Named Inventor	Ekkehard LEBERER
		Group Art Unit	1645
		Examiner Name	Unassigned
		Attorney Docket Number	38005-0126

**OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T <sup>2</sup>
	A13 ✓	KETCHUM, K.A. et al; "A new family of outwardly rectifying potassium channel proteins with two pore domains in tandem", Nature; August 24, 1995; pp 690-695, Vol. 376	
	A14 ✓	KO, C.H. et al; "TRK2 is required for low affinity K <sup>+</sup> Transport in <i>Saccharomyces cerevisiae</i> "; Genetics; June 1990; pp 305-312; Vol. 125; The Genetics Society of America	
	A15 ✓	KO, C.H. et al; "TRK1 and TRK2 encode structurally related K <sup>+</sup> transporters in <i>Saccharomyces cerevisiae</i> " Mol Cell. Biol.; 1991; pp 4266-4273; Vol. 11; American Society for Microbiology	
	A16 ✓	KUBO, Y. et al; "Primary structure and functional expression of a rat G-protein-coupled muscarinic potassium channel", Nature; August 26, 1993; pp 802-806; Vol. 364	
	A17 ✓	LUDWIG, A. et al; "Two pacemaker channels from human heart with profoundly different activation kinetics"; EMBO Journal; 1999; pp 2323-2329; Vol. 18	
	A18 ✓	MADRID, R. et al; "Ectopic potassium uptake in trk1 trk2 mutants of <i>Saccharomyces cerevisiae</i> correlates with a highly hyperpolarized membrane potential"; J. Biol. Chem.; 1998; pp 14838-14844; Vol. 273; The American Society for Biochemistry and Molecular Biology, Inc., United States	
	A19 ✓	MAIN, M.J. et al; "The CGRP receptor can couple via pertussis toxin sensitive and insensitive G proteins"; FEBS Lett.; 1998; pp 6-10; Vol. 441; Federation of European Biochemical Societies	
	A20 ✓	MUMBERG, D. et al; "Yeast vectors for the controlled expression of heterologous proteins in different genetic backgrounds"; Gene; 1995; pp 119-122; Vol. 156	
	A21 ✓	MYERS, A.M. et al; "Mitochondrial protein synthesis is required for maintenance of intact mitochondrial genomes in <i>Saccharomyces cerevisiae</i> "; EMBO Jour.; 1985; pp 2087-2092; Vol. 4; IRL Press Limited, Oxford, England	
	A22 ✓	NAKAMURA, R.L. et al; "Determination of key structural requirements of a K <sup>+</sup> channel pore"; J. Biol. Chem. 1997; pp 1011-1018; Vol. 272; The American Society for Biochemistry and Molecular Biology, Inc.	
	A23 ✓	ROBERDS, S.L. et al; "Cloning and tissue-specific expression of five voltage-gated potassium channel cDNAs expressed in rat heart"; Proc. Natl. Acad. Sci. U.S.A.; 1991; pp 1798-1802; Vol. 88	
	A24 ✓	RONICKE, V. et al; "Use of conditional promoters for expression of heterologous proteins in <i>Saccharomyces cerevisiae</i> "; Methods Enzymol.; 1997; pp 313-322; Vol. 263	

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Sheet 3 of 4

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A25	SANGUINETTI, M. C. et al; "Molecular physiology of cardiac delayed rectifier K <sup>+</sup> channels" Heart Vessels; 1997; pp 170-172; Vol. 12; Springer-Verlag 1997		
A26	SCHREIBMAYER, W. et al; "Inhibition of an inwardly rectifying K <sup>+</sup> channel by G-protein alpha-subunits"; Nature; 1996; pp 624-627; Vol. 380		
A27	SMITH, F.W. et al; "Plant members of a family of sulfate transporters reveal functional subtypes"; Proc. Natl. Acad. Sci. U.S.A.; 1995; pp 9373-9377; Vol. 92		
A28	SNYDERS, D.J. et al; "A rapidly activating and slowly inactivating potassium channel cloned from human heart. Functional analysis after stable mammalian cell culture expression"; J. Gen Physiol.; 1993; pp 513-543; Vol. 101		
A29	TAGLIALATELA, M. et al; "Human ether-a-go-go related Gene (HERG) K <sup>+</sup> channels as pharmacological targets: present and future implications"; Biochem. Pharmacol.; 1998; pp 1741-1746; Vol. 55		
A30	TANG, W. et al; "Functional expression of a vertebrate inwardly rectifying K <sup>+</sup> channel in yeast"; Mol. Biol. Cell; 1995; pp 1231-1240; Vol. 6; The American Society for Cell Biology		
A31	WACH, A. et al; "New heterologous modules for classical or PCR-based gene disruptions in <i>Saccharomyces cerevisiae</i> "; Yeast; 1994; pp 1793-1808; Vol. 10; John Wiley & Sons Ltd.		
A32	WANG, Q. et al; "Genetics, molecular mechanisms and management of long QT syndrome"; Ann. Med.; 1998; pp 58-65; Vol. 30; The Finnish Medical Society Duodecim		
A33	WILDE, A.A. et al; "Ion channels, the QT interval, and arrhythmias"; Pacing. Clin. Electrophysiol.; 1997; pp 2048-2051; Vol. 20		
A34	WISCHMEYER, E. et al; "Subunit interactions in the assembly of neuronal Kir3.0 inwardly rectifying K <sup>+</sup> channels"; Mol. Cell. Neurosci.; 1997; pp 194-206; Vol. 9; Academic Press		
A35	YAMADA, M. et al; "G Protein regulation of potassium ion channels"; Pharmacol. Rev.; 1998; pp 723-760; Vol. 50; The American Society for Pharmacology and Experimental Therapeutics, United States		
A36	BOCK, J.H. et al; "Nucleotide sequence analysis of the human KCNJ1 potassium channel locus"; Gene; 1997; pp 9-16; Vol. 188; Elsevier Science B.V.		

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A37	DEL PON, E. et al.	"Blockade of cardiac potassium and other channels by antihistamines"; Drug Safety; 1999; pp 11-18; Vol. 1; Adis International Limited.	
A38	DRICI, M.D. et al.	"Cardiac K <sup>+</sup> channels and drug-acquired long QT syndrome" Therapie; 2000; pp 185-193; Vol. 55	
A39	DuBUSKE, L.M.	"Second-generation antihistamines: the risk of ventricular arrhythmias"; Clin Ther.; 1999; pp 281-295; Vol. 21	
A40	ITOH, T. et al.	"Genomic organization and mutational analysis of KVLOQT1, a gene responsible for familial long QT syndrome"; Hum. Genet.; 1998; pp 290-294; Vol. 103; Springer-Verlag 1998	
A41	KOBAYASHI, T. et al.	"Inhibition by various antipsychotic drugs of the G-protein-activated inwardly rectifying K(+) (GIRK) channels expressed in xenopus oocytes"; Br. J. Pharmacol; 2000; pp 1716-1722; Vol. 129; Macmillan Publishers Ltd.	
A42	RICHELSON, E.	"Preclinical pharmacology of neuroleptics: focus on new generation compounds"; J. Clin. Psychiatry; 1998; pp 4-11; Vol. 57, Suppl. 11	
A43	RICHELSON, E.	"Receptor pharmacology of neuroleptics: relation to clinical effects"; J. Clin. Psychiatry; 1999; pp. 5-14; Vol. 60, Suppl. 10	
A44	SHUCK, M.E. et al.	"Cloning and characterization of multiple forms of the human kidney ROM-K potassium channel"; J. Biol. Chem.; 1994; pp 24261-24270; Vol. 269; "The American Society for Biochemistry and Molecular Biology, Inc.; United States	
A45	TAGLIALATELA, M. et al.	"Cardiac ion channels and antihistamines: possible mechanisms of cardiotoxicity"; Clin. Exp. Allergy; 1999; pp 182-189; Vol. 29, Suppl. 3; Blackwell Science Ltd.	

Examiner Signature	/Michele K. Joike/	Date Considered	06/18/2008
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